

[10191/1962]

METHOD AND RECEIVER FOR RECEIVING A
RADIO BROADCAST SIGNAL HAVING ENCODED CONTENTS

Technical Field

The present invention relates to a receiver for a radio broadcast signal, in particular a car radio or radiophone, according to the definition of the species in Claim 1. In addition, the present invention relates to a method for receiving a radio broadcast signal, according to the definition of the species in Claim 11.

Background Information

Conventional program transmissions can be received in an unrestricted manner, and their use is compensated for by the payment of appropriate taxes, e.g. to the GEMA [Gesellschaft für musikalische Aufführungs- und mechanische Vervielfältigungsrechte (Society for Musical Performing Rights and Mechanical Reproduction Rights)] in Germany. However, offers and program content are often desired, which go beyond conventional broadcast transmissions, and can only be realized by the user at an additional cost. Such offers may be distributed in encoded form by suppliers, using conventional program transmission channels, anyone being able to receive the signal, but the information contained in it only being rendered accessible to the user, when he or she has paid an appropriate usage fee. To this end, a paying customer receives a decoding device, which is to be looped into the signal path, between the antenna and the receiver, and which decodes the information transmitted in encoded form. But in this case, it is disadvantageous that a separate, supplier-specific decoding device is necessary for each supplier. Therefore, when a customer would like to accept such encoded offers, he or she must first obtain a decoding device, and generally connect it himself or herself. However, this is thought to be

impractical, and it discourages many potential customers from accepting encoded offers. Furthermore, the additional, required hardware expansion is cost-intensive on the side of the user.

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Description of the Present Invention, Object, Solution, Advantages

10 The object of the present invention is to be able to easily make additional, paid offers available in the area of program transmission.

15 This object is achieved by a receiver of the type mentioned above, having the features indicated in Claim 1, and by a method of the type mentioned above, having the features indicated in Claim 11.

20 For this purpose, the present invention provides a receiver of the type mentioned above with a signal decoder, which decodes an audio signal received in encoded form in the radio broadcast signal and/or decodes a data signal received in encoded form in the radio broadcast signal, the signal decoder being designed in such a manner, that the encoded signal is only decoded, when the signal decoder obtains an external authenticating signal received via an external transmission path that is different from a transmission path of the radio broadcast signal.

25 This has the advantage, that the signal decoder can be remotely controlled, without the necessity of additional authentication hardware to be individually provided for each customer. This allows information transmitted via [by] a radio receiver to be released in a selective and controlled manner, e.g. in exchange for fees, using a standardized receiver. Only
35 the data supplier has to worry about the remote-controlled enabling of the signal decoder. The user does not have to make any changes to his or her device for purposes of

authentication. In addition, supplier-specific hardware is not necessary, so that offers of various suppliers can be accepted, using a single device.

5 Preferred further refinements of the receiver are described in Claims 2 through 10.

10 In order to distribute individual authorizations, the external transmission path advantageously includes a mobile radio-communications device [mobile transceiver], which especially complies with the GSM standard, and is connected to the receiver via a communication link, in particular via a wire, infrared, or air interface, the mobile radio device receiving the authentication signal and transmitting it to the receiver, via the communication link.

15 A unified device, such as a radiophone, is made available by positioning [mounting] the mobile radio-communications device and the receiver in a common housing.

20 A preferred embodiment provides a control unit, especially in the form of a processor, which controls the signal decoder and additional, predetermined components of the receiver, via a control bus; a communication link, in particular a wire, infrared, or air interface, being provided between the control unit and the external transmission path, and the control unit transmitting the authentication signal to the signal decoder, when the control unit receives the authentication signal from the external transmission path.

25 An input device that is connected to the control unit is advantageously provided for the user to input data and commands.

30 A receiving part, which demodulates a baseband signal from a radio broadcast signal, and a post-connected audio-signal processing unit are provided in a preferred, specific

embodiment, the signal decoder being situated in a signal path, between the receiving part and the audio-signal processing unit.

5 In order to select between decoding or not decoding an audio signal transmitted with the radio broadcast signal, the signal decoder has a multiplexer, a first, looped-through signal path on which no decoding takes place, and a second signal path having an audio decoder, the first and second signal paths
10 being connected to the multiplexer that is controlled by the audio decoder. In this connection, an output of the multiplexer is connected to the audio-signal processing unit.

15 In order to select between decoding or not decoding a data signal transmitted with the radio broadcast signal, the signal decoder has a third signal path that includes a data decoder. In this connection, an output of the data decoder is connected to the control unit.

20 The above-mentioned type of method according to the present invention provides for an audio signal contained in the radio broadcast signal in encoded form and/or a data signal contained in the radio broadcast signal in encoded form being decoded, when an external authentication signal is received
25 via an external transmission path that is different from the transmission path of the radio broadcast signal.

This has the advantage, that paid offers can be made available per remote control, without the necessity of additional
30 authentication hardware to be individually provided to each customer. Therefore, it is possible for information transmitted via [by] a radio receiver to be released in a selective and controlled manner, e.g. in exchange for fees, using a standardized receiver. Only the supplier of the
35 encoded data signal or audio signal must worry about the remote-controlled enabling of a signal decoder. The user does not have to make any changes to his or her device for purposes

of authentication. In addition, supplier-specific hardware is not necessary, so that offers of various suppliers can be accepted, using a single device.

5 Advantageous refinements of the method are described in Claims 12 and 13.

10 In order to distribute individual authentications, the authentication signal is transmitted via a mobile telephony network [mobile radio network], to a mobile radio-communications device connected to the receiver by a communications interface, especially by a wire, infrared, or air interface.

15 A receiver for the transmission path of the radio broadcast signal is advantageously controlled via the external transmission path.

20 Brief Description of the Drawing

25 The present invention is explained below in detail, using the enclosed drawing. The one figure of the drawing shows a preferred embodiment of a receiver according to the present invention.

30 Best Mode of Implementing the Present Invention

35 The preferred embodiment of a receiver 100 according to the present invention, represented in Figure 1, includes an AM/FM receiving part 10, a signal decoder 12, an audio-signal processing unit 14, an audio power amplifier 16, loudspeaker 18, a control unit 20, a mobile radio-communications part 22 (GSM = Global System for Mobile Communication), and an output and input [input/output] device 24. Signal decoder 12 includes an audio decoder 26, a data decoder 28, and a multiplexer 30. Control unit 20 controls AM/FM receiving part 10, audio decoder 26, and data decoder 28, using a control bus 32. Data

decoder 28 has a digital output [data output] 34, which is connected to control unit 20,, and via which the control data and user data are transmitted to control unit 20.

5 A demodulated baseband signal coming from AM/FM receiving part 10 is directed to signal decoder 12, which has three signal branches 36, 38, and 40. First signal branch 36 allows the audio signal to pass through without being affected, second signal branch 38 decodes the audio signal previously encoded on the side of the transmitter, and third signal branch 40 decodes a data stream, which is processed further in control unit 20, e.g. in a processor. By way of multiplexer 30, the two audio signals of the specific signal branches 36, 38 arrive in the block, audio-signal processing 14, which carries out conventional functions, such as sound control, volume control, balance control, or fade control. Which of the signal branches 36 or 38 is presently active at signal decoder 12, depends on the control data transmitted via control bus 32.

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20 Mobile radio-communications part 22 communicates with input device 24 via control unit 20, the input device also being referred to as an MMI (man-machine interface). The control unit evaluates, inter alia, the data stream coming from mobile radio-communications part 22, and selects appropriate data for controlling signal decoder 12 and, if present, AM/FM receiving part 10. So if mobile radio-communications part 22 receives an appropriate authentication signal, then control unit 20 transmits a corresponding authentication signal via signal bus 32, in order to activate audio decoder 26 and/or data decoder 28.

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35 Therefore, the present invention provides for signal decoder 12 being inserted in the branch of the demodulated baseband of a first transmission path, in this case AM/FM receiver 10, certain signals or data in the baseband signal of the AM/FM receiver being blocked or decoded per remote control, via a second transmission path, in this case a mobile telephony

network. As a further option, AM/FM receiver 10 can also be remotely controlled via the second transmission path (mobile telephony network), in order to, for example, select a channel. Corresponding encoding is provided on the transmission side, in the transmission path of AM/FM receiver 10. Furthermore, there is communication between the broadcasting network and the mobile telephony network.

In a particularly preferred, specific embodiment, the present invention provides a combination of a car radio and a mobile radio-communications device in a 1-DIN housing, which is expanded to include the above-mentioned present invention. However, it is also possible to have an arbitrary combination of AM/FM receiving part 10 and mobile radio-communications device 22, which must not necessarily be integrated in a housing. For example, a so-called cellular phone may communicate with a car-radio device via a wire, infrared, or air interface.